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5 DRINKING WATER

Synopsis

The purpose of this section is to provide information regarding the procurement and maintenance of the drinking water used at NOAA facilities and work sites. The section applies to all NOAA facilities, work sites, ships and employees.

Initial Implementation Requirements:

- **Determine Source of Drinking Water - Bottled Water, Private Well or Public Water System**
- **If Bottled Water:**
  - Attempt to learn where and when the water was bottled (5.5.1)
- **If a Well:**
  - Determine if the well serves more than 25 people, 60-days per year (5.5.2)
  - If no, test water for at least nitrate and bacteria (5.5.2a)
  - If yes, perform all testing as required by the Safe Drinking Water Act (5.5.2)
- **Initiate Water Conservation Program** (5.7)
  - Inform NOAA personnel on the necessity and scope of the program.

Recurring and Annual Task Requirements:

- **If Water Comes from a Private Well:**
  - Test water on an annual basis (5.5.2a)
  - Maintain the well and surrounding area (5.5.2b)
  - Provide information on the water conservation program on a periodic basis

Checklist

5 Drinking Water for Land Based Facilities/Work Sites	YES	NO	N/A
1. Does the facility/work site use a well that supplies more than 25 people? (5.5.1)	☐	_____	_____
2. Does the facility/work site use a private well (supplies less than 25 people)? (5.5.2)	_____	_____	_____
3. If a private well, is a test for nitrate and bacteria performed annually? (5.5.2a)	_____	_____	_____
4. If the well is under the control of NOAA:			
a. is it periodically inspected for cracked or broken casing or cap? [5.5.2b(1)(a)]	_____	_____	_____
b. is the area surrounding the well sloped away from the well head? [5.5.2b(2)]	_____	_____	_____
c. has a sanitary seal been applied to prevent unauthorized use or entry? [5.5.2b(3)])	_____	_____	_____
d. are records of all well maintenance kept on-site? [5.5.2b(4)]	_____	_____	_____
e. are chemical mixing activities performed away from the well? [5.5.2b(6)]	_____	_____	_____
f. if a septic system is also used, is the septic system pumped and inspected according to local Health Department guidelines? [5.5.2b(7)]			
5. Has a water conservation program been investigated and implemented? (5.7)	_____	_____	_____

5 Drinking Water for Ships	**YES**	**NO**	**N/A**
1. Does the ship treat the drinking water for more than 25 people for 6 months or more? (5.6.2)	☐	_____	_____
2. Does the ship drinking water system only consist of storage and distribution facilities and does not have any collection and treatment facilities? (5.6.1)	_____	_____	_____
3. Are the potable water hoses used, stored, and marked in accord with NC Instruction 5100.1B? (5.6.1)	_____	_____	_____
a. are the hoses used only for transferring potable water? (5.6.1a)	_____	_____	_____
b. are the hoses properly stored in accordance with section 8-6.12 of NC instruction 5100.1B? (5.6.1a)	_____	_____	_____
c. are the hoses and storage lockers properly marked in accordance with section 8-6.13 of NC Instruction 5100.1B (stenciled in blue letters which read "Potable Water Only") (5.6.1a)	_____	_____	_____
4. Do the potable water filling lines and connections meet the requirements of NC Instruction 5100.1B? (5.6.1a)	_____	_____	_____
a. are the filling lines connected only to potable water tanks as required by NC Instruction 5100.1B? (5.6.1a)	_____	_____	_____
b. are the filling connections fitted with screw cap and keeper chain and configured and marked in accordance with section 8-6.4 of NC Instruction 5100.1B? (5.6.1a)	_____	_____	_____
5. Have the potable water tanks been opened, inspected, cleaned and, if necessary, coated every five years as required by NC Instruction 5100.1B? (5.6.1b)	_____	_____	_____

	YES	NO	N/A
6. If any portion of the potable water system has been contaminated or is opened for inspection, repairs, contents replacement, has it been cleaned, disinfected and flushed before the affected portions are placed back into service?	____	____	____
a. Has disinfection been accomplished in accordance with section 8-6.4 of NC Instruction 5100.1B? (5.6.1b)	____	____	____
7. Are potable water filling lines thoroughly flushed and disinfected before each use? (5.6.1b)	____	____	____
8. Have the US Coast Guard procedures (COMDTPUB 5090.1) been adopted?	____	____	____
a. Are the ship's personnel routinely collecting and monitoring drinking water samples (at least weekly) to ensure a measurable residual of at least 0.2 ppm free available chlorine with a pH value in the range of 6.8 to 7.8 in all parts of the distribution system? (5.6.2)	____	____	____
b. Are ship personnel routinely collecting samples for bacteriological testing (at least 4 samples per month)? (5.6.2)	____	____	____
9. Have the existing inventory of pipe, solder and flux been checked to ensure it is lead free? (5.6.1b)	____	____	____

5 DRINKING WATER

5.1 Purpose and Scope

This section is promulgated to ensure all NOAA personnel are provided clean, pure drinking water at all NOAA facilities and work sites as well as on NOAA ships. The section applies to all NOAA facilities, work sites and ships.

5.2 Definitions

Designated Person - a NOAA employee designated by the Designated Responsible Official who is responsible for ensuring the drinking water at the work site is pure and meets all Federal, State and local regulations. This person need not be the Facility Environmental Coordinator.

Designated Responsible Official (DRO) - the senior NOAA official on-site. This official has authority over operations or activities which are subject to environmental and worker safety statutes. The responsibility of the DROs is inherent in their position and need not be formally designated or ascribed.

Facility Environmental Coordinator (FEC) -the individual responsible for ensuring the activities carried out at a facility are conducted in accordance with Federal, State and local environmental regulations. Typically, each NOAA facility will have a designated FEC who is also responsible for compliance with occupational safety and health requirements. In the NWS, this individual is identified as the Environmental and/or Safety Focal Point.

Grey Water - slightly contaminated water resulting from washing/rinsing operations.

Xeriscaping - landscaping technique which minimizes the use of water for irrigation.

5.3 Acronyms

CFR	-	Code of Federal Regulations
EPA	-	Environmental Protection Agency
DRO	-	Designated Responsible Official
FEC	-	Facility Environmental Coordinator
NOAA	-	National Oceanic & Atmospheric Administration
NWS	-	National Weather Service
RECO	-	Regional Environmental Compliance Officer
SDWA	-	Safe Drinking Water Act

5.4 Regulatory Requirements

Under the authority of the Safe Drinking Water Act (SDWA), the EPA has established the Office of Groundwater and Drinking Water which has created regulations for:

a. Drinking water
b. Standards for public drinking water systems
c. Programs to protect groundwater supplies.

5.5 NOAA Program for Land Based Facilities/Work Sites

5.5.1 Public Water Systems

Land-based NOAA facilities and work sites usually receive drinking water from one of three sources: bottled water, a public drinking water system or a private well. Of these, the EPA, regulates the public water systems under the SWDA by setting and enforcing water quality standards. Under this system, the local water authority or system is required to ensure the water it produces meets the EPA drinking water standards. NOAA facilities or sites connected to public water systems are only required to ensure the incoming water piping system is properly installed and maintained to avoid any cross contamination with the waste or sewage drain piping system.

Normally the use of bottled water is considered a safe alternative however, facilities using this type of drinking water must always be aware where the water is bottled and approximately when. Cases have been reported where water bottled after a major weather or natural event in the area of the bottling plant had been contaminated causing warnings to be issued.

Facilities using a private well are not regulated by the EPA.

5.5.2 Private Wells

Because the EPA considers water wells that supply water to fewer than 25 people to be “private wells,” the agency does not regulate them nor the water they produce. Some state and local governments do regulate these wells, however, and thus a check with the local Health Department will be necessary.

If the drinking water for a NOAA facility is supplied by a well and the well serves more than 25 people at least 60-days per year, the well is considered a public water supply and subject to all the requirements of the SDWA.

Because the requirements for public drinking water systems are very extensive and expensive, NOAA facilities that meet this definition must contact the NOAA Regional Environmental Officer (RECO) for assistance.

a. Water Testing

For NOAA facilities and work sites served by a private well, maintaining the system will include testing of the water annually for nitrate and coliform bacteria to detect contamination problems. If a problem is suspected, the water should be tested more frequently and possibly for more potential contaminants such as radon or pesticides. A list of the 80 contaminants controlled by the EPA as part of the primary drinking water standards can be found in 40 CFR Part 141.

The testing for nitrate and bacteria samples will typically cost between $10 and $20 to perform, however, testing for pesticides and other organic chemicals and metals can exceed several thousand dollars.

Because the states certify water testing labs, a call to the State Certification Officer can quickly provide a list of labs who are approved to perform the testing. A list of State Certification Officers is available on-line at http://www.epa.gov/safewater/faq/sco.html.

If a standard is exceeded, retest immediately and contact the Regional Environmental/Safety Coordinator (if applicable), NOAA RECO and/or the Public Health Department for assistance.

If the problem persists, bottled water shall have to be brought in to keep the facility or work site operational.

b. Well Maintenance

If the water well is under the control of NOAA, it must be maintained and protected from contamination. This effort will include:

(1) periodically inspecting exposed parts of the well for problems such as:

(a) cracked, corroded or damaged well casings
(b) broken or missing well caps
(c) settling and cracking of surface seals

(2) Sloping the area around the well to drain surface run-off away from the well.

(3) Installing a well cap or sanitary seal to prevent unauthorized use of, or entry into, the well.

(4) Keeping accurate records of any well maintenance, such as disinfection or sediment removal, that may require the use of chemicals in the well.

(5) Hiring a certified well driller for any new well construction, modification or abandonment and closure.

(6) Avoiding mixing or using pesticides, fertilizers, herbicides, degreasers, fuels and other pollutants near the well.

(7) Pumping and inspecting the septic system as often as recommended by the local Health Department.

In addition, all facility maintenance personnel must be informed that they must:

(1) Not dispose of wastes in dry wells or in abandoned wells.

(2) Not cut off the well casing below the land surface.

(3) Never dispose of hazardous materials in a septic system.

5.6 NOAA Program for Ships

5.6.1. Smaller Ships

Most NOAA ships only store and distribute drinking water produced by a public water system that is owned or operated by another party and they do not sell water to any party. As a result, the ship is not subject to the SWDA. To ensure the drinking water is kept safe for NOAA personnel, NC Instruction 5100.1B, "Safety Standards for Ships of the NOAA Fleet" and Appendix D of the NOAA Fleet Medical Policy Manual "Handbook on Sanitation of Vessels in Operation" specify the procedures to be used for the marking, stowage and use of filling hoses as well as the configuration of the filling lines and connections to ensure that the drinking water in not contaminated.

a. Hoses, Filling Lines and Connections

The "Safety Standards for Ships of the NOAA Fleet" are specified in NC Instruction 5100.1B and amplified in Appendix D of the NOAA Medical Policy Manual - "Handbook on Sanitation of Vessels in Operation" which

specifies the procedures for the marking, stowage and use of filling hoses and the configuration of filling lines and connections to ensure that the ship's drinking water is not contaminated.

Potable water hoses are to be used only for transferring potable water and should be properly stored. These hoses and their storage lockers should be marked with the words "Potable Water Only." Potable water filling lines are to be connected only to the potable water tanks. The filling connections must be fitted with a screw cap and keeper chain. These must be configured and marked in accordance with Section 8-6.2.2 of the Safety Standards for Ships of the NOAA Fleet.

b. Inspection, Cleaning, Disinfection and Monitoring

The disinfection procedures for the ship's potable water system and potable water filling hoses is detailed in Safety Standards for the Ships of the NOAA Fleet and Appendix D of the NOAA Medical Policy Manual - "Handbook on Sanitation of Vessels in Operation." When opened for repair, inspection, contents replacement or contamination, the affected portion of the system must be disinfected and flushed prior to being placed back in service. The potable water filling lines must be flushed and disinfected in accordance with section 8-6.4.1 of Safety Standards for Ships of the NOAA Fleet.

Only lead free pipe, solder and flux may be used during any repairs made to the potable water system.

5.6.2 Larger Ships

Larger ships that collect and treat water onboard to at least 25 people for 6 months a year are subject to the SDWA and thus the water produced by the treatment system must be sampled and monitored as required by Subpart C of 40 CFR 141.21. A copy of the monitoring results must be reported to the appropriate State agency as well as retained on-site. At a minimum, the system must be routinely monitored (at least on a weekly basis) to maintain a measurable residual of at least 0.2 ppm free available chlorine with a pH between 6.8 and 7.8 in all parts of the distribution system. Additionally, bacteriological testing of the system must be performed using a certified laboratory or, if this is not practical, the membrane (millipore) filter technique.

Again, only lead free pipe, solder and flux may be used during any repairs made to the potable water system.

5.7 Water Conservation

Regardless of whether a NOAA facility, work site or ship obtains drinking water from a municipal water system, an on-site well or an onboard treatment system, the facility, work site or ship will implement and maintain a water conservation program that acknowledges that water is a valuable resource that cannot and must not be wasted. The EPA estimates that of the 150-gallons of water each person uses everyday, only 1/2-gallon is used for drinking. The remaining 149-1/2-gallons are used for cooking, cleaning, flushing, watering lawns, etc.

The Conservation Program should include:

a. Replacement or maintenance of all leaking plumbing fixtures.
b. Use of "greywater" where possible.
c. Use of pressure-reducing valves on intake water feed lines to maintain the pressure to no more than 60-pounds per square inch.
d. Use of low-flow shower heads and toilets.
e. Use of "push" knobs on faucets rather than "turn valves."
f. Repair/replace all leaky faucets
g. For the land based facilities, the use of "Xeriscaping" to reduce external water use. Xeriscaping is a landscaping program which:

    (1) plans and designs to minimize expense and maintenance
    (2) uses turf only where needed for functional purposes. Turf alternatives such as mulches and drought-tolerant ground covers are substituted.
    (3) uses drought-tolerant plants and planning placement around sun exposure.
    (4) Uses mulches for water retention, long-term fertilization and weed control.
    (5) efficiently irrigates through grouping plants according to water needs.
    (6) improves the soil to allow for better absorption of water.
    (7) maintains the landscape properly to save maintenance costs.

5.8 Responsibilities

5.8.1 NOAA Headquarters

a. The NOAA Environmental/Safety Office shall perform an annual assessment of the NOAA headquarters facilities to ensure that the facilities are in compliance with this section.

b. The NOAA Environmental/Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this section. The frequency of these regional and field office assessments shall be determined by the NOAA Environmental/Safety Office.

c. Requests for clarification concerning this section shall be directed to the NOAA Environmental/Safety Office.

5.8.2 Regional or Operating Unit Environmental/Safety Coordinator

a. Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters and field offices or operating units.

b. Shall ensure that procedures are developed at regional headquarters or operating unit facilities.

c. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this section.

d. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of the section.

5.8.3 Designated Responsible Official

a. Shall have oversight over the implementation of this section and ensure that the requirements of this section are followed by individuals at the NOAA facility.

b. Shall ensure sufficient personnel and funding are available to enable compliance with all applicable requirements of this section.

c. Shall ensure that procedures are developed at NOAA field offices for protecting on-site well water quality.

d. Shall review or delegate review of this section on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

5.8.4 Facility Environmental Coordinator, Environmental and/or Safety Focal Point or Designated Person

a. Shall ensure any tasks delegated to them by the Designated Responsible Official are implemented in accordance with the requirements of this section.

b. Shall ensure NOAA facility/work site drinking water is tested annually for at least nitrate and coliform if the water is derived from a private well.

5.8.5 Employees

a. Individual employees affected by this section are required to read, understand and comply with the requirements of this section.

b. Report all violations of the requirements of this section to their supervisor or Environmental Focal Point.

5.9 References

Incorporated References

The following list of references is incorporated as a whole or in part into this section. These references can provide additional explanation or guidance for the implementation of this section.

5.9.1 U.S. Environmental Protection Agency

40 CFR 141 Natural Primary Drinking Water Regulations

5.9.2 U.S. Environmental Protection Agency

"Who is Responsible for Drinking Water Quality?", http://www.epa.gov/safewater/dwh/who.html

5.9.3 Office of Marine and Aviation Operations

NC Instruction 5100.1B, "Safety Standards for Ships of the NOAA Fleet"

5.9.4 NOAA Fleet Medical Policy Manual - Appendix D

"Handbook on Sanitation on Vessels in Operation"